**Teacher Name: Christopher Barrett**

**Final Lesson: How Clean Is Your Air?**

**Lesson Duration: 90 minutes (2 Periods)**

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| **Essential Question** | | How does air pollution affect the air we breathe both inside and outside? |
| **Objectives**  **(Learning Outcomes)** | | Students will be able to identify elements of particulate matter and determine how their locations affected the outcome of the experiment. |
| **Teacher Standards** | | Domain 3 – Instruction  3b – Using Questioning and Discussion Techniques  3c – Engaging Students In Learning |
| **Common Core Learning Standard(s)** | | W.6.1: Write arguments to support claims with clear reasons and relevant evidence.  RST.6.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.  RST.6.9: Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.  SL6.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly. |
| **Key Terms** | | particulate matter, pollution, toxins, dust, mold, dirt, pollen, |
| **Mini-Lesson**  (procedure) | | Day 1  (5 minutes)   * Students will fill out a short quiz sheet in which they identify what they think is one source of air pollution, and one effect of air pollution.   (5 minutes)   * Students will then be shown a video *What’s In The Air You Breathe?*: https://youtu.be/hUcp9C6hl4I   (10 minutes)   * Immediately following the video, students will then be distributed a sheet showing examples of particulate matter. * Teacher will ask:   Q: What is particulate matter?  Q: How does particulate matter contribute to pollution?  Q: What are some ways we could identify particulate matter?  Q: Could we find particulate matter in and around our school?  Q: Where are some locations that may have more/less particular matter?  (5 minutes)   * Students will then be divided into four groups. Groups will receive worksheets outlining task and steps. Each group will randomly choose one pre-determined location either inside or outside to place their slide. Students will then be shown a sample test kit that they have to put together.   (20 minutes)  To assemble cards to collect samples students will have to:   1. Tie a string through the hole in each card and make loops for hanging cards in chosen locations, 2. Using a marker, trace the outline of a penny onto a glass slide in order to create your sample area. 3. Securely tape the edges of the slide to the center of one of your index cards. 4. Smear a thin layer of Vaseline on the sample area on the glass slide. 5. Repeat steps 2-4 for remaining cards. 6. Hang index card in a secure spot in the chosen location. 7. Leave card there until next session.   Day 2  (45 minutes)   * After students collect their samples students will then review what they completed for the first part of the experiment. Students will also be asked again what they are looking for with their samples placed under a microscope.   Students will then complete the following steps:   1. Carefully collect index cards and while handling them make sure not to touch the Vaseline-covered sample area. Groups will bring cards to workstations to examine them. 2. Carefully remove glass slide from Sample 1 index card. Hold the slide by the edges and carefully place under microscope. 3. Count the number of particles found in the Vaseline-covered area of the sample. A particle in the sample is any speck on the slide, which could be dust, pollen, or another form of matter. 4. Record the number of particles found in lab sheet. 5. Repeat steps 2-4 for any other samples   Students will then share data and compile it onto classroom chart(s) to compare results. |
| **Practice (Guided / Independent)** – How will students practice the new skill or material? | | |
| * Students will begin lesson based on activation of prior knowledge air pollution. * Students will be guided through first part of lesson based on teacher directed questions of their knowledge from the short quiz, video, and handout. * Students will have a chance to independently practice assembling slides and recording data collected on slides. | | |
| **UDL** | **1.3, 2.1, 3.1, 7.2, 8.3, 9.3** | |
| **DOK Levels Addressed:** | **One: Identify** elements of particulate matter that are both discussed and collected.  **Two**: **Show** the significance of the presence of particulate matter on the slides.  **Three**: **Explain** how the different locations of the samples were important, and how it could impact a person’s overall health. | |
| **Assessment**:  Formative assessment - Students begin lesson by complete the short quiz and sharing information.  Summative assessment – Students share data results, and draw conclusions based on the data and make inferences beyond the data in how it could impact a person’s quality of life. | | |
| **Differentiation:**   * Lower level groups could work in small group with paraprofessional. * Moderate level groups could work with guidance from teacher. * Higher level groups could work independently. | | |